Roadmap to Better Writing

We live in the age of information, but not everything that is transmitted is intelligible enough to be understood. Editors of medical and scientific journals are known to complain–in print–about articles that are difficult to read. Most problems, they say, are caused not by complexity of scientific thought but by poor writing. The result is manuscripts filled with puzzling jargon and confusing construction–obstacles that cause readers either to abandon an article or to misinterpret it.

Two other problems that medical editors encounter are manuscripts that digress from their topic and those that fall short of editorial specifications. Authors who have ignored submission criteria are likely to have had difficulty organizing their material as well. Some may have lost their focus, perhaps even their interest, in the topic. Such manuscripts need careful editorial attention, and preparing them for publication is slow and painstaking–a frustrating experience for all concerned.

The editors of *JAAPA* want to move manuscripts forward to publication with as few impediments as possible. Most writing problems, we believe, can be avoided if the author understands how to produce a focused, organized, accurate, easy-to-read article– something that is worthy of a professional.

Gathering information
Sharpening your focus
Who is your audience?
What is your purpose?
Organizing your ideas
Basic structure
Structure of research reports
Other features of medical articles
Keeping your readers awake on the road
Creator to critic
Suggested reading

Gathering information
As you assemble material for your article, remember the following guidelines:

- Use up-to-date references. Although review articles can provide basic information, most referenced information should come from articles that offer findings based on sound research. Consider periodicals and on-line sources (PubMed and the Cochrane database, for example). Avoid textbook references altogether. How many references should you include? No answer can cover all topics, but strive to include as many references as are needed, but no more, to support your statements of fact, hypotheses, and conclusions.
- Be aware of your bias. You are the best resource for a large part of your research. As you tap your knowledge and experience, be alert for your bias. Look for other data, and do not ignore data that are inconsistent with your point of view.
- Support your ideas. When medieval architects built towering cathedrals, they constructed flying buttresses to support the walls. Professional articles require the same cautionary care. When gathering research, remember that your major points or arguments will be more legitimate when supported with examples, statistics, comparisons or contrasts, and explanations.

Sharpening your focus
Visiting the entire state of Texas is a tremendous undertaking. So is writing an article on the general topic of infectious disease. Narrow your focus so that your topic is manageable.

General David C. Jones, former chairman of the Joint Chiefs of Staff, said: "My guidelines are simple. Be selective. Be concise. Don't tell someone what you know; tell them what they need to know, what it means, and why it matters."[1] No editor could give better advice.

Before you begin to write, ask yourself some questions about your topic:

- For whom are you writing?
- For what purpose are you writing on this topic?
- Do others need to know what you have to say?
- What is the one provocative thought you would like to leave with your readers?
- What is the scope of your article?
- Is your topic so broad that readers will become lost as they read it, or swampedby excessive information?
- Will your topic lead to an article that just rehashes a chapter in a medical textbook? Or will your article leave PA readers with new ideas or practical strategies for addressing a clinical problem?
- What is the appropriate niche in *JAAPA* for your topic? (See Submission Guidelines for more information.)

Who is your audience?
If a typical PA were sitting across from you, what would you want to say? How much of that should you attempt to communicate at one time? How should you dress your message so that it will be interesting? How well versed is your reader likely to be in the subject?

Knowing your audience helps you choose a focus for the article. Many PAs are still concentrated in primary care, and *JAAPA* sees its main audience as primary care PAs. An article on Zarin's approach to anterior cruciate ligament reconstruction, for example, should discuss causes, findings, preventive measures, and surgical options for athletes who have unstable knees–but should not provide meticulous operative detail.

What is your purpose?
Before you write an article, you must know why you are doing it. Ask yourself: Is this necessary? And why do I want to write it? Keep your purpose(s) in mind when you define your specific objective. Ask yourself: What is the most important point I want to communicate to other PAs? If you cannot think of anything, ask: What do I want other PAs to do as a result of my article? The answer to these questions is your specific objective. Write it down. It will help you remain focused as you research and begin to organize your article.

Organizing your ideas
Writing an article that has clarity of thought and unity of idea requires organization and structure. An outline is a good way to organize your paper, and it is the sure cure for writer's block. Before you begin an outline, however, write down your specific objective. At this point, some other ideas may come to mind. Write down any ideas that seem to support or relate to your specific purpose; the more, the better. Then look at the list and discard the ideas that are not related to your purpose or are not required for readers to understand what you are saying. Remember that information unrelated to your specific objective only clutters your article.

Next, look at the list and identify the main and supporting ideas. Main ideas stand out because they are equally important and are so essential to your stated purpose that forgetting one would make your article appear incomplete. Supporting ideas can be identified as ideas that expand your main points and give greater detail and credibility. Determining main and supporting ideas helps you set priorities so that you can impose order on the article. You will then be able to lead readers, step by step, through the unfolding discussion. Your main ideas eventually become the topic sentences of paragraphs.

Basic structure
Aristotle noted that any form of writing that moves through time needs three parts: a beginning, a middle, and an end. These give the writing stability.

Dissertations and essays of any sort generally have a basic three-part structure. The beginning, or introduction, sets the tone of the essay, gives it direction, and states the thesis. The middle, or body, is where main and supporting ideas are set down to amplify the thesis, involve the audience, and fulfill their expectations. The end, or conclusion, restates the thesis, summarizes the reader's journey, expands the implications, and announces arrival at the destination.

Introduction: Any introduction should lead the audience gracefully into the topic. As with a speech, the introduction should feel like the beginning of a planned trip, not an accident. Establish rapport with your audience with a tone that makes them trust and respect you and that tells them you have something important to say.

Begin your introduction with a general but pertinent statement. Proceed to paint an overview of the topic. If appropriate, include a brief, selective review of the literature here. Be sure to refer to the purpose of your paper. Tell readers why the subject is important to them. And state your thesis and main points at the end of the introductory paragraph. This is one of two key positions of emphasis in the article. (The other is the conclusion.)

Clever writers also anticipate opposition and prepare for it in the thesis statement with a clause such as "Despite many advantages . . ." or "Although the old technique. . . ." By using a subordinate clause, you assign the opposition to a subordinate position. Because the position of importance in any sentence is at the end, your thesis thus receives additional emphasis.

Body: Once your thesis has been announced, it stimulates interest and carries readers into the body of the article, where your main and supporting ideas are discussed. Writing the body of a manuscript takes a lot of concentration and perseverance. Retaining reader interest here is crucial. At the least, arrange your discussion paragraphs in the order in which you promised them in the introduction.

Conclusion: The conclusion of an article is often left unfinished by authors or ignored altogether. Without it, however, the article is incomplete. Because readers remember the last thing they read, you should summarize your pertinent findings, restate the thesis, confirm that you have supported it, and make conclusions. The article then comes full circle and readers feel enlightened and satisfied.

Structure of research reports
Research reports have the same structure as most manuscripts: introduction, discussion, and conclusion. Following the introduction of a research report, however, are two parts found only in research articles: methods and materials, and results.

The introduction of a research report should begin with a brief description of the problem being studied and a clear statement of why the problem is important professionally or clinically. Cite only key previous studies as background. State the outcome measures used and explain why they were chosen.

In materials and methods, describe how the study was performed. Give sufficient detail so that another investigator can duplicate the study. Explain how the population was selected; describe eligibility and exclusion criteria, stating how they were assessed and what baseline measurements were made. The results section should contain all data collected from the study and any results of statistical analysis. Account for all subjects from the start of the trial to completion.

Reserve comments on the data or statistical findings for the discussion.

In the discussion, describe the clinical significance of the study, its strengths and weaknesses, and its potential biases and how they might affect results.

Other features of medical articles
Medical articles have additional features that are important to consider when assembling a manuscript.

The abstract: An abstract directs readers to what the article contains. It should state the purpose of the article; summarize its main points; describe the design, setting, subjects, interventions, and basic procedures that were followed; state the main findings; and declare principal conclusions. *JAAPA* requires a full abstract but not more than 150 words with all research manuscripts. For review articles, on the other hand, a more compact version (50 words or less) is requested. This kind of abstract should be limited to a clear pronouncement of the objective(s) of the article. Department pieces do not require abstracts.

Tables and figures: As you write the first draft, note the places where you think a figure–clinical photograph, anatomic drawing, diagnostic image, graph, etc.—or table would be appropriate. Seek out tables and figures that are interesting and add value to your article, or take the time to develop your own. These elements are usually worth a multitude of words in a journal, especially in teaching articles. They break up long stretches of text and engage readers in greater activity by setting up data or examples for closer and different scrutiny.

Tables and figures in the public domain (such as material from any government agency) can be used without requesting permission and, often, paying a fee. To use published material that is not in the public domain, the author must write to request permission from the copyright holder, author, or artist. You can also submit your own tables and figures (photographs, computer graphics, and graphs are acceptable as the basis for further refinement by the design staff).

Keep in mind that *JAAPA* has access to a bank of professional scientific and medical artists who can turn your sketches into accomplished, instructive illustrations. The editorial staff can work with you on the specifics; if you are uncertain how to proceed with this aspect of manuscript preparation, please call the editors.

A good table is concise, complete, and congruent. Select data for a table that explain the study, examine the hypothesis or thesis, and allow comparison with other studies. A table can have many elements but still be concise, preferably giving only one or two trends. Columns and rows of data with counts of people or events should be totaled for the reader. Numbers in the tables should be congruent with the words of the text.

Avoid using sparse data–that is, data that could be presented in one or two sentences in text–for graphs or tables. Avoid duplication of text material in tables, figures, and boxes also known as sidebars, such as for presenting a case study or a news update). Refer to all tables, figures, and boxes by number in the text.

Deciding whether to use a table or a graph can be difficult. Here is a useful rule: Data that show pronounced trends and make an interesting picture should take the form of a graph.

Keeping your readers awake on the road
We have all had the experience of falling asleep while reading. Remember struggling to keep your eyes open, your mind focused, your head erect, and your elbows bent? Most likely you were reading something academic, something that you felt you had to read or were required to read. Remember blaming yourself? Well, it might not have been your fault. Some writers subvert their writing by using too many words or opting for dull, lifeless language. This type of writing seems to have become epidemic in our society, and it defeats the purpose of communication.

Here are a few suggestions on steering clear of what the writer George Orwell called "mass language":

- Avoid clichés (phrases that you are used to seeing in print).
- Do not use long, Latin-based words, foreign phrases, or scientific words if you can think of everyday English equivalents.

- Tighten–cut the number of words–wherever you can.

Prefer active voice to passive voice. Be certain, however, that changing a passive statement to an active form does not erase some subtlety of meaning.
Voice is the form of the verb that tells whether the subject acts or receives the action.
When the subject does the action, the verb is active. When the subject receives the action, the verb is passive. Active voice is more direct, concise, and vigorous; passive voice often takes a form of the verb to be. Compare "Writers should avoid passive voice" to "Passive voice should be avoided by writers" and you see the distinction. This does not mean that you should always avoid the passive. Sometimes it is necessary. But remember that frequent use of active voice makes your writing more forceful and keeps readers awake.

Avoid awkward construction. Complex sentences contain several ideas that are interwoven with clauses and phrases. When a complex sentence is not constructed skillfully, it becomes confusing and awkward. Verbs are often separated from their subjects, relative pronouns aren't placed close enough to their antecedents, and modifiers are misplaced. In the end, the reader receives incomplete or inaccurate information or no information at all. Read and reread your sentences. Ask others to do the same with your writing. If sentences do not make sense because they are too long, too complex, or too convoluted, reconstruct them by keeping related words together or by creating several simple sentences.

Give your sentences strength. Place important words at the beginning or end of a sentence to give them emphasis. Make positive statements instead of negative ones. Sentences that contain "not" weaken a statement. They make the writer appear wishy-washy. Compare "He was not very often on time" to "He usually came late." Parallel construction also strengthens writing. No complex sentence is successful without it. Abraham Lincoln was a master writer who used parallel construction to express parallel ideas. Study this excerpt from Lincoln's Second Inaugural Address. The parallel words are italicized. *With* malice toward none; *with* charity for all; *with* firmness in the right, as God gives us to see the right, let us strive on to finish the work we are in: *to* bind up the nation's wounds; *to* care for him who shall have borne the battle, and for his widow and his orphan, *to* do all which may achieve and cherish a just and lasting peace among ourselves, and with all nations.

Provide bridges and road signs. Each discussion paragraph explores or explains a single narrow topic related to the mission of the article. The paragraph comprises a topic sentence (a statement that tells readers the main idea to be discussed); discussion sentences; and a transitional element of one or more words. Transitional words are essential because they link paragraphs and ideas, thereby preventing misinterpretations. Like bridges, they connect. For maximum benefit, transitional words should be placed within the first few words of the sentence. They are placed in the first or last sentence of a paragraph. In this way, they provide unity to the article and prepare the reader for what comes next. Here, by category, are some useful transitional words to remember:

- Addition: furthermore, in addition, moreover, similarly, and, also, likewise, too
- Opposition: but, however, although, nevertheless, still, yet
- Cause and effect or consequence: hence, therefore, thus, consequently
- Conclusion: so, therefore, for, as a result, consequently, in summary
- Exemplification: for example, for instance, to illustrate, that is
- Intensification: in fact, indeed, even, as a matter of fact
- Sequence: first, second, last, in conclusion

Just as transitions act as bridges, orienters act as road signs, showing readers the way and providing a point of view. They should be placed at the beginning of a sentence. Orienters can be any of the transitional devices just mentioned, or they can be something similar to the following types of words and phrases:

- Time and place: during the last decade, in the South
- Qualifiers (ie, words restricting the range of certainty of an assertion): under these circumstances, with these restrictions
- Perspective: generally, usually, pragmatically

Creator to critic

Once your ideas are on paper in logical order, the temptation is great to send the manuscript off to be published. But writing an article does not end with the first draft. From now until your manuscript is published, writing requires you to switch roles several times from creator to critic and back to creator again. Most people need a few hours or a few days to make these switches.

When you are ready to evaluate your first draft objectively, plan to read what you have written three times. Read it first for clarity, accuracy, and adequacy of information. Are your main points and supporting points clear to the PA reader? Do you have enough information? Too much? Should you have included more, or fewer, explanations of terms and concepts? Is some information irrelevant to PAs? Revise accordingly!

Read the manuscript a second time for arrangement of ideas. Does the title accurately reflect the subject? Do the abstract, introduction, and conclusion state the purpose? Does the conclusion provide a wrap-up? Do ideas in the body of the manuscript flow smoothly and logically? Is the body well organized? Do topic sentences reflect main ideas? Revise again!

Next, evaluate the manuscript for readability. Is it awkward? Does it have too many words or phrases? Is the grammar correct? Is the language lively? Have you followed JAAPA's requirements for manuscript preparation? Revise!

Once you are satisfied that the manuscript is as good as you can make it, it's time to submit. See Submission Guidelines for more information.

Reference

1. Staley HA. *The New Tongue and Quill: Your Practical and Humorous Guide to Better Communication.* Washington, DC: Pergamon-Brassey's International Defense Publishers; 1990:20,24.

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